TECHNICAL REVIEW DOCUMENT for OPERATING PERMIT 99OPBO223 to be issued to:

International Business Machines
Boulder County
Source ID 0130006

Prepared February 2000

Jacqueline Joyce, Review Engineer

Revised May 2000, November 2002 and February and April 2003

I. Purpose

This document will establish the basis for decisions made regarding the Applicable Requirements, Emission Factors, Monitoring Plan and Compliance Status of Emission Units covered within the Operating Permit proposed for this site. It is designed for reference during review of the proposed permit by the EPA and during Public Comment. The conclusions made in the report are based on information provided in the original application submittal of December 21, 1999, additional technical information submitted July 12, 2000, November 30, 2001 and May 21, 2002, comments on the draft operating permit received June 27, 2000 and January 24, 2003, comments on the draft permit received during the Public Comment period, e-mail correspondence and telephone conversations with the source. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

II. Source Description

This source is classified as a provider of computer-related services under Standard Industrial Classification 7379. This facility consists of 21 emergency generators, 2 diesel fire water pumps, 4 boilers fueled by natural gas, with diesel and/or jet fuel as back-up, 2 cooling water towers, a fuel oil storage tank and a cold cleaner solvent degreaser. The Title V operating permit application was submitted as a combined construction/operating permit to allow the source to construct and operate an additional 8 emergency generators. With the additional emergency generators, facility wide emissions exceed the major source level.

Issuance of the operating permit was delayed and as a result a construction permit was issued on December 28, 2002 to allow the construction and operation of the additional 8 emergency generators.

This facility is located at 6300 Diagonal Highway in Boulder, CO. The Denver metro area, including Boulder, is classified as attainment/maintenance for particulate matter less than 10 microns (PM_{10}), ozone and carbon monoxide. Under that classification, all SIP-approved requirements for PM_{10} , VOC and CO will continue to apply in order to prevent backsliding under the provisions of Section 110(I) of the Federal Clean Air Act.

Rocky Mountain National Park and Eagle's Nest and Rawah National Wilderness Areas, all federal class I designated areas, are within 100 km of this facility. There are no affected states within 50 miles of this facility.

This facility is not classified as a major stationary source for purposes of prevention of significant deterioration (PSD) review requirements. Emissions at the facility are as follows:

Pollutant	Potential to Emit (tons/yr)
PM	20.83
PM ₁₀	20.83
SO ₂	1.7
NO_X	112.9
VOC	3.7
CO	62.5
HAPS	0.94

Potential to emit is based on permitted emissions for the emission units and on the values reported in the Title V permit application for the grandfathered cooling tower. Potential to emit for HAPS is based on the values reported in the Title V permit application. Information in the Division's 2001 emission inventory indicates that IBM has reported potential emissions as actual, which is an acceptable practice. Therefore, actual emissions are not shown in the above table.

The source indicated in their Title V permit application that they were not subject to the 112(r) Accidental Release Requirements.

The new boiler #4 is equipped with low NO_X burners to reduce NO_X emissions. Low NO_X burners are not considered a control device as defined in 40 CFR Part 64 §64.1, as adopted by reference in Colorado Regulation No. 3, Part C, Section XIV, since low NO_X burners are considered inherent process equipment. The cooling towers are equipped with drift eliminators to reduce drift and subsequently particulate matter emissions are also reduced. The Division considers that these devices are not control devices as defined in 40 CFR Part 64 §64.1, as adopted by reference in Colorado Regulation No. 3, Part C, Section XIV, since they are passive control measures. Therefore, since none of the

significant emission units at this facility are equipped with control devices, the Compliance Assurance Monitoring (CAM) requirements do not apply to any emission units at this facility.

III. Emission Sources

The following sources are specifically regulated under terms and conditions of the Operating Permit for this site.

A. Units G001 thru G023: Twenty-One (21) Emergency Generators and Two (2) Fire-Water Pumps. All Diesel Fuel Fired.

Specific information on these units is provided in the table below:

1. Applicable Requirements - The following table specifically identifies the emergency generators and fire-water pumps.

Unit/Stack No.	Rating (hp)	Manufacturer, Model No. and Serial No.	Date Placed in Service
G001/GS001	2,340	Detroit, Model No. 91637416, Serial No. 16E00159	1993
G002/GS002	2,340	Detroit, Model No. 91637416, Serial No. 16D0011665	1993
G003/GS003	2,340	Detroit, Model No. 91637416, Serial No. 16D0011655	1994
G004/GS004	2,498	Caterpillar, Model No. 3516EUI, Serial No. 5SN00623	1999
G005/GS005	1,574.8	Caterpillar, Model No. 3512 SR4, Serial No. 6PA00599	1986
G006/GS006	1,574.8	Caterpillar, Model No. 3512 SR4, Serial No. 6PA00589	1986
G007/GS007	1,574.8	Caterpillar, Model No. 3512 SR4, Serial No. 6PA00601	1986
G008/GS008	1,574.8	Caterpillar, Model No. 3512 SR4, Serial No. 6PA00583	1986
G009/GS009	449	Caterpillar, Model No. 3406 SR4, Serial No. 6BA02186	1986
G010/GS010	166	Onan, Model No. 100 GDB, Serial No. G980768391	1999
G011/GS011	110	Detroit, Model No. 471, Serial No. 4A95022	1966
G012/GS012	155	Caterpillar, Model No. 3304 PC, Serial No. 44BH3649	1978
G013/GS013	160	Detroit, Model No. 471, Serial No. E7054	1977
G014/GS014	375	Onan, Model No. NT6656, Serial No. H840722230	1986
G015/GS015	120	Caterpillar, Model No. 3304 PC, Serial No. 36BH3004	1978
G016/GS016	194	Caterpillar, Model No. 3208 SR4, Serial No. 6HA00970	1966
G017/SG017	67	Onan, Model No. 50 DDB, Serial No. 1174893614	1977
G018/GS018	2,340	Detroit, Model No. 91637416, Serial No. 16E13124/16E13127	1996

Unit/Stack No.	Rating (hp)	Manufacturer, Model No. and Serial No.	Date Placed in Service
G019/GS019	2,340	Detroit, Model No. 91637416, Serial No. 16E13125/16E13126	1996
G020/GS020	2,340	Detroit, Model No. 91637416, Serial No. 16E13128/16E13123	1996
G021/GS021	1,574.8	Caterpillar, Model No. 3512 SR4, Serial No. 2DN00734	1997
G022/GS022	150	Cummings, Model No. WHS61F, Serial No. 513356 Emergency Fire Water Pump	1966
G023/GS023	209	Cummings, Model No. NT-855F2, Serial No. 10674765 Emergency Fire Water Pump	1977

Permit 95BO557 (initial approval modification, July 16, 1999) was issued for these emergency generators and fire-water pumps. The due date of the first semi-annual monitoring report required by this operating permit will be more than 180 days after the initial approval construction permit 95BO557 was issued and/or the equipment commenced operation. Therefore, under the provisions of Regulation No. 3, Part C, Section V.A.2, the Division is allowing the initial approval construction permit to continue in full force and effect and will consider the Responsible Official certification submitted with that report to serve as the demonstration required pursuant to Regulation No. 3, Part B, Section IV.H. and no final approval construction permit will be issued. The appropriate provisions of the initial approval construction permit have been directly incorporated into this operating permit.

These units are subject to the following applicable requirements as identified in permit 95BO557:

 Opacity shall not exceed 20% under normal conditions. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes (condition 1).

Note that Colorado Regulation No. 1 does not identify the 20% opacity requirement as a condition that only applies during normal operation and EPA has objected, in comments on another operating permit, to the term "normal operations" applied to the 20% opacity standard. The specific operational activities subject to the 30% opacity requirement are also conditions that can be considered "normal operation". Therefore, the language in the permit will not specify "normal operation".

In addition, the 30% opacity requirement applies under other specific activities than those indicated in the construction permit. Therefore, the 30% opacity requirement will be written to include all the specific operational activities identified in Reg 1.

 Construction of this source must commence within 18 month of initial approval permit issuance or within 18 months of the date on which such construction or activity was scheduled to commence as stated in the application. If commencement does not occur within the stated time the permit will expire on January 16, 2001 (condition 4).

Note that according to the operating permit application, all of the units covered under permit 95BO557 have commenced operation. Therefore, this requirement will not be included in the operating permit.

Consumption of diesel fuel is limited as follows (condition 5):

Engines < 600 hp 6,870 gal/yr Engines > 600 hp 106,996 gal/yr

Monthly records of actual consumption shall be maintained by the applicant and made available to the Division for inspection upon request. Compliance with the yearly consumption limits shall be determined on a rolling twelve (12) month total.

• Emissions of air pollutants shall not exceed the following limitations (condition 9):

Particulate Matter (PM)

Particulate Matter less than 10 microns (PM₁₀)

Sulfur Dioxide (SO₂)*

Nitrogen Oxides (NO_X)

Volatile Organic Compounds (VOC)*

Carbon Monoxide (CO)

2 tons/yr

0.6 tons/yr

41.6 tons/yr

1.7 tons/yr

14.8 tons/yr

Compliance with the annual limits shall be determined on a rolling twelve (12) month total. By the end of each month a new twelve month total is calculated based on the previous twelve months' data. The permit holder shall calculate monthly emissions and keep a compliance record on site for Division review.

*The SO₂ and VOC emission limits will not be included in the operating permit as specific applicable requirement since emissions are below APEN de minimis levels. Note however, that SO₂ and VOC emissions shall still be reported on any APENs submitted and are still subject to annual fees.

- Major stationary source requirements for non-attainment areas shall apply at such time that this source becomes major solely by virtue of relaxation in any permit condition (condition 10).
 - Since the Denver metro area is no longer non-attainment for PM₁₀, the emergency generators are no longer a synthetic minor source for non-attainment area review. Therefore, this condition is no longer necessary.
- PSD requirements shall apply to this source at any such time that this source becomes major solely by virtue of a relaxation in any permit condition (condition 11).

The emergency generators are still a synthetic minor source for purposes of PSD review. However, condition 11 will not be included in the operating permit, since no actual requirements apply, unless certain modifications to the permit conditions for these generators are made. Although this requirement will not be included in the permit, future modifications that cause the generators to become major, for purposes of PSD review, by virtue of relaxation of any of these permit conditions will result in the application of PSD review.

 Operating Permit (OP) requirements shall apply to this source at any such time that this source becomes major by virtue of a relaxation in any permit condition (condition 12).

The facility is now a major source for purposes of operating permit applicability and the source is in the process of getting an operating permit. This requirement does need not be included in the operating permit.

Prior to final approval being issued, the applicant shall submit to the
Division for approval an operating and maintenance plan for all control
equipment and control practices, and a proposed recordkeeping format
that will outline how the applicant will maintain compliance on an ongoing
basis with the requirements in conditions 5 & 9 (condition 13).

This requirement will not be included in the operating permit, since periodic monitoring requirements will be included in the operating permit to monitor compliance with the fuel consumption and emission limits.

 Nitrogen oxide emissions from all insignificant activities shall not exceed one ton per year (second condition 13).

Since the Denver metro area is no longer non-attainment for PM_{10} , this facility is no longer a synthetic minor source for purposes of major non-attainment area review. Therefore, the requirement to track NO_X emissions from insignificant activities is no longer necessary and will not be included in the operating permit.

Although not specifically identified in permit 95BO557, the following requirements still apply to these units:

SO₂ emissions shall not exceed 1.5 lbs/mmBtu (Colorado Regulation No. 1, Section VI.A.3.b.(i)) for units constructed or modified prior to August 11, 1977 (units G011, G016 and G022) and 0.8 lbs/mmBtu (Colorado Regulation No. 1, Section VI.B.4.b.(i)) for units constructed or modified after August 11, 1977 (all other units).

Note that the Title V permit application only identifies the unit startup dates, not the construction dates. Therefore, only those units with an in service date prior to 1977 were considered to be subject to the less stringent SO₂ standard. Although several units are identified as being in service in 1977, there is not enough information in the permit application to determine if construction commenced prior to August 11, 1977.

- RACT requirements for VOC emissions (Colorado Regulation No. 7, Section II.C.2).
- RACT requirements for PM₁₀ and CO emissions (Colorado Regulation No. 3, Part B, Section IV.D.2.d.(i)).
- RACT requirements for NO_X emissions (Colorado Regulation No. 3, Part B, Section IV.D.2.d.(ii)).

For these units RACT will be considered good combustion practices and use of low sulfur (0.05% by weight) diesel fuel as fuel for these units.

Note that RACT is not required for SO₂ for these units since these units are being permitted with a potential to emit below 40 tpy for SO₂ pursuant to Colorado Regulation No. 3, Part B, Section IV.D.2.d.(ii).

In their Title V permit application, the source indicated that the RACT requirements for VOC emissions only apply to the new units (operation commenced after October 30, 1989). The potential to emit (PTE) of VOC from the existing units, does not exceed 100 tpy, based on the PTE calculation method identified in Reg 7, Section II.C.1.a, therefore, the Division agrees that only the new units (G001 thru G004, G010 and G018 thru G021) are subject to the RACT requirements. Note that the RACT requirements for PM_{10} , CO and NO_X apply to all units.

The Title V permit application identifies many general applicable requirements (i.e. performance testing at Division request, upset conditions, circumvention, transfer of ownership, compliance with construction permit requirements) for these units that will not be specifically identified in the operating permit, as they are included in the general conditions of the permit. The Title V permit application also identifies the Reg 1 particulate matter standards for fuel burning equipment, the state only (Reg 6 Part B) new source performance standards for fuel burning equipment and the state only lead ambient standards (Reg 8, Part C, Section I.B). These requirements have not been included in the operating permit because the Division does not consider internal combustion engines to be fuel-burning equipment and the Division does not consider the combustion of No. 2 diesel fuel to be a significant source of lead emissions.

2. Emission Factors - Approval of emission factors is necessary to monitor compliance with the emission limitations. The following emission factors (as proposed by the source in their Title V permit application and revised due to

recent performance tests) are approved for use to monitor compliance with the emission limitations:

2498 HP Unit (G004)

<u>Pollutant</u>	Emission Factor	<u>Source</u>
PM PM ₁₀ SO ₂ ¹	0.3 lbs/hr 0.3 lbs/hr 6.90 lbs/10 ³ gal	Manufacturer's Guarantee Manufacturer's Guarantee Fire, Version 6.21, 5/99, SCC 2-02-004-01
NO _X	6.90 lbs/10 ³ gal 730 lbs/10 ³ gal	December 1997 Stack Test on one 2340 HP unit
CO	260 lbs/10 ³ gal	December 1997 Stack Test on one 2340 HP unit
VOC	1.04 lbs/hr	Manufacturer's Guarantee

¹Based on a maximum sulfur content of 0.05 weight %

2340 HP Units (G001, 002, 003, 018, 019 & 020)

<u>Pollutant</u>	Emission Factor	<u>Source</u>
PM PM ₁₀ SO ₂ ¹	9.55 lbs/10 ³ gal 7.85 lbs/10 ³ gal 6.90 lbs/10 ³ gal 730 lbs/10 ³ gal	Fire, Version 6.21, 5/99, SCC2-02-004-01 Fire, Version 6.21, 5/99, SCC 2-02-004-01 Fire, Version 6.21, 5/99, SCC 2-02-004-01
NO_X	730 lbs/10 ³ gal	December 1997 Stack Test on one of these units
CO	260 lbs/10 ³ gal	December 1997 Stack Test on one of these units
VOC	2.30 lbs/hr	Manufacturer's Guarantee

¹Based on a maximum sulfur content of 0.05 weight %

1574.8 HP Units (G005, 006, 007, 008 & 021)

<u>Pollutant</u>	Emission Factor	<u>Source</u>
PM PM ₁₀ SO ₂ ¹ NO _X CO VOC	0.6 lbs/hr 0.6 lbs/hr 6.90 lbs/10 ³ gal 379 lbs/10 ³ gal 55 lbs/10 ³ gal 1.20 lbs/hr	Manufacturer's Guarantee Manufacturer's Guarantee Fire, Version 6.21, 5/99, SCC 2-02-004-01 March 2001 Stack Test on one of these units March 2001 Stack Test on one of these units Manufacturer's Guarantee

¹Based on a maximum sulfur content of 0.05 weight %

Note that the Division does not agree with an emission factor in units of lbs/hr as it implies that emissions are the same, regardless of engine load, which is not

correct. Therefore, the Division converted these emission factors to factors in units of lbs/ 10^3 gal by dividing the emission factor by the maximum hourly fuel consumption of these units. This emission factor has been included in the permit. Note that the PM and PM₁₀ emission factors for the 2498 and 1575 hp units are less than AP-42 emission factors. The VOC emission factor for the 2498 hp engine is below AP-42 emission factors. Typically the Division requires more stringent monitoring requirements (i.e. portable monitoring or one time stack testing) for units using emission factors less than AP-42, however, since PM, PM₁₀ and VOC emissions are insignificant compared to NO_X and these units are run infrequently, the Division will allow the source to use those emission factors without requiring further testing to verify the emission factors.

For Units 600 hp

<u>Pollutant</u>	Emission Factor	<u>Source</u>
PM	42.5 lbs/10 ³ gal	Fire, Version 6.21, 5/99, SCC2-02-001-02
PM_{10}	42.5 lbs/10 ³ gal	Fire, Version 6.21, 5/99, SCC2-02-001-02
SO_2	39.7 lbs/10 ³ gal	Fire, Version 6.21, 5/99, SCC2-02-001-02
NO_X	379 lbs/10 ³ gal	March 2001 Stack Test on one 1574.8 HP unit
CO	55 lbs/10 ³ gal 49.3 lbs/10 ³ gal	March 2001 Stack Test on one 1574.8 HP unit
VOC	49.3 lbs/10 ³ gal	Fire, Version 6.21, 5/99, SCC2-02-001-02

- **3. Monitoring Plan -** The source shall be required to monitor fuel consumption and calculate emissions, from each generator, monthly. Hours of operation and the maximum hourly fuel consumption rate shall be used to determine fuel consumption from individual generators. EPA Reference Method 9 observations shall be required to monitor compliance with the opacity requirements. Compliance with the sulfur dioxide requirements shall be monitored by sampling diesel fuel to verify the sulfur content of the fuel does not exceed 0.05% and that the heat content of the fuel is not less than 49,600 Btu/gal.
- **4. Compliance Status -** The source indicated in their Title V permit application that these units are in compliance with all applicable requirements.

B. Units G024 thru G031: Eight (8) New Emergency Generators. All Diesel Fuel Fired.

Specific information on these units is provided in the table below:

Unit/Stack No.	Rating (hp)	Manufacturer, Model No. and Serial No.	Date Placed in
			Service
G024/GS024	824	Caterpillar, Model No. 3412, Serial No. 81225453	2001
G025/GS025	2,876	Caterpillar, Model No. 3516, Serial No. 6HN01627	2001
G026/GS026	2,876	Caterpillar, Model No. 3516, Serial No. 6HN01629	2001
G027/GS027	2,498	Caterpillar, Model No. 3516, Serial No. 25Z02324	2003
G028/GS028	2,498	Caterpillar, Model No. 3516, Serial No. TBD	To Be Determined
G029/GS029	2,498	Caterpillar, Model No. 3516, Serial No. TBD	
G030/GS030	2,498	Caterpillar, Model No. 3516, Serial No. TBD	
G031/GS031	2,498	Caterpillar, Model No. 3516, Serial No. TBD	

1. Applicable Requirements - With the Title V permit application, the source requested that a combined construction/operating permit be issued for the 8 proposed new emergency generators. The processing of the Title V permit application was delayed and as a result Colorado Construction Permit 00BO0630 was issued on December 28, 2000 as an initial approval permit. The source has demonstrated compliance under the provisions of Regulation No. 3, Part B, Section IV.H (self-certification submitted on October 9, 2001) for initial approval construction permit 00BO0630 but not yet received a final approval construction permit. Under the provisions of Regulation No. 3, Part C, Section V.A.3, the Division will not issue a final approval construction permit and is allowing the initial approval construction permit to continue in full force and effect. The appropriate provisions of the initial approval construction permit have been directly incorporated into this operating permit.

These units are subject to the following applicable requirements as identified in permit 00BO0630

 Visible emissions from each engine shall not exceed 20% opacity during normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes. Opacity shall be measured by EPA Method 9 (Condition 1 and Reg 1, Sections II.A.1 & 4).

Note that as discussed under the 21 emergency generators and 2 firewater pumps, the 20% opacity requirement will not be identified as

applying under "normal operations".

In addition as discussed under the 21 emergency generators and 2 fire water pumps, the 30% opacity requirement applies under other specific activities than those indicated in the construction permit. Therefore, the 30% opacity requirement will be written to include all the specific operational activities identified in Reg 1.

Consumption of fuel shall not exceed 14,184 gal/mo and 56,730 gal/yr of Nos. 1 and/or 2 diesel fuel. (condition 5):
 During the first twelve (12) months of operation, compliance with both the monthly and yearly consumption limitations shall be required. After the first twelve (12) months of operation, compliance with only the yearly limitation shall be required. Compliance with the yearly consumption limits shall be determined on a rolling twelve (12) month total.

Since it has been more than one year since the first generator started up, the monthly fuel consumption limit will not be included in the permit.

• Emissions of air pollutants shall not exceed the following limitations (condition):

 NO_X 5.2 tons/mo and 20.7 tons/yr CO 1.8 tons/mo and 7.4 tons/yr During the first twelve (12) months of operation, compliance with both the monthly and yearly emission limitations shall be required. After the first twelve (12) months of operation, compliance with only the yearly limitation shall be required. Compliance with the yearly consumption limits shall be determined on a rolling twelve (12) month total.

Note that PM, PM_{10} , SO_2 and VOC emission limits were not included in the construction permit since emissions were below APEN de minimis levels. Note however, that emissions of these pollutants shall still be reported on any APENs submitted and are still subject to annual fees.

Since it has been more than one year since the first generator started up, the monthly emission limitations will not be included in the permit.

- SO₂ emissions from each unit shall not exceed 0.8 lbs/mmBtu (condition 15 and Reg 1, Section VI.B.4.b.(i)).
- Permit conditions for the new generators shall expire if construction does
 not commence within 18 months of issuance of the combined
 construction/operating permit; construction is discontinued for a period of
 18 months or more; or construction is not completed within a reasonable
 time of the estimated completion date (Reg 3, Part B, Section IV.G.4.a.(i) (iii)). An extension of the 18 month construction period may be granted
 provided good cause is shown, an extension may not exceed 18 months

(condition 4 and Reg 3, Part B, Section IV.G.4.b).

As of this date initial construction has commenced and three generators have been installed. Since this is a phased construction activity, this requirement will remain in the permit, however, the language regarding the initial construction will not be included. If more than 18 months passes before a generator is installed then the permit conditions will expire for any generator that has not been installed. In addition, if construction is not completed within a reasonable time of the estimated completion date, the permit will expire for any generator that has not been installed. In their combined construction/operating permit application, the source indicated that all generators would be installed within 5 years. As discussed previously, delays occurred during processing of the combined construction/operating permit and a separate construction permit was issued for these proposed generators. Therefore, the Division will consider that the estimated completion date is 5 years from issuance of the construction permit (December 28, 2005).

- The permittee shall notify the Division 30 days prior to startup of each unit (condition 7 and Reg 3, Part B, Section IV.H.1).
- Within 180 calendar days after startup, the source shall certify compliance with the terms and conditions for these units (condition 8 and Reg 3, Part B, Section IV.H.2).

As discussed previously, the source submitted a self-certification on October 9, 2001 indicating that they could comply with the provisions in the construction permit. Therefore, this requirement will not be included in the permit.

- RACT requirements for VOC emissions (condition 13 and Colorado Regulation No. 7, Section II.C).
- RACT requirements for PM₁₀ and CO emissions (condition 12 and Colorado Regulation No. 3, Part B, Section IV.D.2.d.(i)).

For these units RACT will be considered good combustion practices and use of low sulfur (0.05% by weight) diesel fuel as fuel for these units.

Note that RACT is not required for NO_X or SO_2 for these units since these units are being permitted with a potential to emit below 40 tpy for those pollutants pursuant to Colorado Regulation No. 3, Part B, Section IV.D.2.d.(ii).

• The sulfur content of the diesel fuel shall not exceed 0.05% by weight (condition 11).

Since RACT for PM_{10} , CO and VOC is use of low sulfur fuel (< 0.05% by weight) it is not necessary to have a separate requirement limiting the sulfur content of the fuel. Therefore, this requirement will not be included in the operating permit.

 Prior to final approval being issued, the applicant shall submit to the Division for approval an operating and maintenance plan for all control equipment and control practices, and a proposed recordkeeping format that will outline how the applicant will maintain compliance on an ongoing basis with the requirements of condition no. 5 and 9 listed above (condition 14)

The source submitted a compliance plan with their self-certification on October 9, 2001; therefore this requirement will not be included in the operating permit. The operating permit will contain the necessary monitoring required to assess compliance with the permit conditions.

 Major stationary source requirements for non-attainment areas shall apply at such time that this source becomes major solely by virtue of relaxation in any permit condition (condition 10).

Since the Denver metro area is no longer non-attainment for PM₁₀, the emergency generators are no longer a synthetic minor source for non-attainment area review. Therefore, this condition is no longer necessary.

 APEN reporting (condition 6 and Colorado Regulation No. 3, Part A Section II.C)

The APEN reporting requirements will not be identified in the permit as a specific condition but are included in Section IV (General Conditions) of the permit, condition 22.e.

As discussed for the 21 generators and 2 fire water pumps, many of the general applicable requirements identified in the Title V permit application will not be specifically identified in the operating permit, as they are included in the general conditions of the permit. In addition, as discussed for the 21 generators and 2 fire water pumps, the requirements for fuel burning equipment (Reg 1 and Reg 6 Part B) and the state only lead standard will not be included in the operating permit.

2. Emission Factors - Approval of emission factors is necessary to monitor compliance with the emission limitations. The following emission factors (as proposed by the source in their Title V permit application and revised due to recent performance tests) are approved for use to monitor compliance with the emission limitations:

824 HP Unit (G024)

<u>Pollutant</u>	Emission Factor	<u>Source</u>
PM	0.87 lbs/hr	Manufacturer's Guarantee
PM_{10}	0.87 lbs/hr	Manufacturer's Guarantee
SO_2^1	6.90 lbs/10 ³ gal	Fire, Version 6.21, 5/99, SCC 2-02-004-01
NO_X	379 lbs/10 ³ gal	March 2001 Stack Test on one 1574.8 HP unit
CO	55 lbs/10 ³ gal	March 2001 Stack Test on one 1574.8 HP unit
VOC	0.13 lbs/hr	Manufacturer's Guarantee

¹Based on a maximum sulfur content of 0.05 weight %

2876/2498 HP Units (G025 thru 031)

<u>Pollutant</u>	Emission Factor	<u>Source</u>
PM	0.3 lbs/hr	Manufacturer's Guarantee
PM ₁₀	0.3 lbs/hr	Manufacturer's Guarantee
SO_2^1	6.90 lbs/10 ³ gal	Fire, Version 6.21, 5/99, SCC 2-02-004-01
NO _X	730 lbs/10 ³ gal	December 1997 Stack Test on one 2340 HP unit
CO	260 lbs/10 ³ gal	December 1997 Stack Test on one 2340 HP unit
VOC	1.04 lbs/hr	Manufacturer's Guarantee

¹Based on a maximum sulfur content of 0.05 weight %

Note that the Division does not agree with an emission factor in units of lbs/hr as it implies that emissions are the same, regardless of engine load, which is not correct. Therefore, the Division converted these emission factors to factors in units of lbs/ 10^3 gal by dividing the emission factor by the maximum hourly fuel consumption of these units. This emission factor has been included in the permit. Note PM, PM₁₀, and VOC emission factors for the proposed units are less than AP-42 emission factors. Typically the Division requires more stringent monitoring requirements (i.e. portable monitoring or one time stack testing) for units using emission factors less than AP-42, however, since PM, PM₁₀ and VOC emissions are insignificant compared to NO_X and these units are run infrequently, the Division will allow the source to use those emission factors without requiring further testing to verify the emission factors.

3. Monitoring Plan - See Monitoring Plan for the 21 existing generators and 2 fire water pumps for more detailed information on monitoring requirements. In addition, for these units the source will be required to provide notification of startup of each unit, to have no construction gaps of 18 months or more and to complete installation within a reasonable time of the estimated completion date.

- **4. Compliance Status –** As of this date, four units have been installed. The source submitted a self-certification on October 9, 2001 indicating that they could comply with the applicable requirements.
- C. Units B001 thru B004: Three (3) Keystone Boilers, Model and Serial Nos. 17228/97125, 17229/97126 and 17619/997758, rated at 60, 60 and 66 mmBtu/hr. One (1) Nebraska Type O Boiler, Model No. NOS-2A-58, Serial No. O-4556, Rated at 54.4 mmBtu/hr, Equipped with Todd Low NO $_{\rm X}$ Veriflame Burners. Each Boiler is Natural Gas Fired with Diesel and/or Jet Fuel as Backup.
 - 1. Applicable Requirements The Keystone boilers were first placed in service in 1965 (60 mmBtu/hr units) and 1968. Construction commenced on the Nebraska boiler in October 2002 and startup is expected on December 1, 2002.

In the original Title V permit application, four boilers were identified, the Keystone boilers (boilers 1-3) and an additional Keystone rated at 80 mmBtu/hr (boiler 4). Boilers 1 – 3 were permitted in Colorado Construction Permit 94BO366 and Boiler 4 was permitted in Colorado Construction Permit 11BO579. Following submittal of the Title V permit application, the source requested that the 4 boilers be included in one construction permit, with no increase in total emissions or fuel consumption to allow for more operational flexibility. The Division issued Colorado Construction permit 94BO366 on March 22, 2002 as a final approval permit. This permit included all 4 Keystone boilers and permit 11BO579 was subsequently cancelled. Later in the summer of 2002, the source indicated that Boiler 4 required replacement. Subsequently Colorado Construction Permit 94BO366 was revised to address the replacement for boiler 4 and issued on September 12, 2002 as an initial approval permit. The due date of the first semiannual monitoring report required by this operating permit will be more than 180 days after the initial approval construction permit 94BO366 was issued and/or the equipment commenced operation. Therefore, under the provisions of Regulation No. 3, Part C, Section V.A.2, the Division is allowing the initial approval construction permit to continue in full force and effect and will consider the Responsible Official certification submitted with that report to serve as the demonstration required pursuant to Regulation No. 3, Part B, Section IV.H. and no final approval construction permit will be issued. The appropriate provisions of the initial approval construction permit have been directly incorporated into this operating permit.

These units are subject to the following applicable requirements as identified in permit 94BO366:

 Visible emissions from each boiler shall not exceed 20% opacity during normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more then six minutes in any sixty consecutive minutes (condition 1 and Colorado Regulation No. 1, Sections II.A.1 and 4).

Note that as discussed under the 21 emergency generators and 2 firewater pumps, the 20% opacity requirement will not be identified as applying under "normal operations".

In addition as discussed under the 21 emergency generators and 2 fire water pumps, the 30% opacity requirement applies under other specific activities than those indicated in the construction permit. Therefore, the 30% opacity requirement will be written to include all the specific operational activities identified in Reg 1.

- Sulfur content of the diesel oil or jet fuel shall not exceed 0.05% by weight.
 Each shipment of diesel oil and/or jet fuel must be certified (by test or
 manufacturer specification) for sulfur content and the records maintained
 by the operator and made available to the Division for inspection upon
 request. In lieu of source sampling, vendor sampling results may be used
 to monitor compliance with the sulfur content (condition 5).
- Emissions of air pollutants shall not exceed the following limitations (condition 7):

 $\begin{array}{ccc} PM & 3.1 \ tons/yr \\ PM_{10} & 3.1 \ tons/yr \\ SO_2^* & 1.1 \ tons/yr \\ NO_X & 50.6 \ tons/yr \\ VOC & 2.0 \ tons/yr \\ CO & 40.3 \ tons/yr \end{array}$

*The SO₂ emission limits will not be included in the operating permit as a specific applicable requirement since emissions are below APEN de minimis levels. Note, however, that SO₂ emissions must still be reported on any APENs submitted and are subject to annual fees.

- The boiler shall be operated at a minimum load of 20%, except during such periods as startup and shutdown and limited periods when the boilers are kept warm (but not carrying load) in order to enable a "hot startup" (condition 8).
- Major stationary source requirements shall apply at such time that this source becomes major solely by virtue of a relaxation in any permit condition. Any relaxation that increases the potential to emit above the

applicable major stationary source threshold will result in this source being subject to Major Stationary Source requirements of Regulation Number 3, Part B, Sections IV.D.2 and 3. This source shall not exceed the major stationary source threshold until compliance with Regulation 3.B.IV.D.2 and 3 has been achieved (condition 16).

The major stationary source requirements that are referenced above are major non-attainment area NSR and PSD. Since the Denver metro area is no longer non-attainment, the major non-attainment NSR requirements no longer apply. The boilers are still a synthetic minor source for purposes of PSD review. However, this condition will not be included in the operating permit since no actual requirements apply, unless certain modifications to the permit conditions for the boilers are made. Although this requirement will not be included in the permit, future modifications that cause these boilers to become major for purposes of PSD review, by virtue of relaxation of any of these permit conditions will result in the application of PSD review.

Boiler 4 is subject to Reasonably Available Control Technology (RACT) standards for Particulate Matter less than 10 microns. RACT is determined to be use of natural gas or low sulfur (less than 0.05% by weight) fuel oil (condition 9)

Note that at the time of construction permit issuance RACT applied for any level of PM $_{10}$ emissions. At permitted fuel consumption limits, the NO $_{\rm X}$ emissions from boiler 4 were not over 40 tons/yr so RACT did not apply for NO $_{\rm X}$ emissions.

• **Boiler 4** is subject to Reasonably Available Control Technology (RACT) standards for Volatile Organic Compounds. RACT is determined to be good combustion practices and use of natural gas or low sulfur (less than 0.05% by weight) fuel oil (condition 9)

Note that boilers 1 - 3 were placed in service prior to 1972, so RACT requirements (Reg 3, Part B, Section IV.D.2.d.(i) and (ii)) do not apply for PM_{10} , CO, NO_X and SO_2 emissions. The potential to emit of VOC emissions from these units, based on the methodology in Reg 7, Section II.C.1.a.(ii), is less than 100 tpy, therefore RACT requirements (Reg 7, Section II.C.1.a.(i)) for VOC emissions do not apply.

RACT does not apply for boiler 4 with respect to CO emissions, since at the time of the construction permit issuance, the Denver metro area was attainment for CO and Reg 3 did not contain any requirements for RACT in attainment/maintenance areas.

 For Boilers 1- 3 sulfur dioxide emissions from each boiler shall not exceed 1.5 lbs/mmBtu, when burning fuel oil (condition 11)

- For Boiler 4 sulfur dioxide emissions shall not exceed 0.8 lbs/mmBtu, when burning fuel oil (condition 12)
- Boiler 4 is subject to Regulation No. 6 standards of performance for New Stationary Sources, Part B - Specific Facilities and Sources, Non-Federal NSPS, II – Standards of Performance for New Fuel-Burning Equipment, State-only requirements as follows (condition 13)
 - Particulate matter emissions shall not exceed 20% opacity
 - Particulate matter emissions shall not exceed PE = 0.5(FI)^{-0.26} (Section II.C.2)

Where: PE = Particulate emissions in lbs/mmBtu
FI = Fuel input in mmBtu/hr

Sulfur dioxide emissions shall not exceed 0.8 lbs/mmBtu (Section II.D.2.a)

Note that only the opacity requirement was included in the construction permit.

- Boiler 4 is subject to Regulation No. 6 Standards of Performance for New Stationary Sources (NSPS), Part A – Federal Register Regulations (40 CFR Part 60) Adopted by Reference, Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, including but not limited to, the following (condition 14):
 - Sulfur Dioxide Requirements
 - Sulfur content of fuel oil not to exceed 0.5 weight percent (40 CFR Part 60 Subpart Dc § 60.42c(d))
 - Compliance may be based on supplier certification (40 CFR Part 60 Subpart Dc § 60.42c(h)(1))
 - Fuel oil sulfur limits apply at all times, including periods of startup, shutdown and malfunction(40 CFR Part 60 Subpart Dc § 60.42c(i))
 - Particulate Matter Requirements
 - Opacity not to exceed 20% (6-minute average), except for one 6-minute average not to exceed 27% opacity (40 CFR Part 60 Subpart Dc § 60.43c(c))
 - The opacity standard applies at all times except during periods of startup, shutdown and malfunction (40 CFR Part 60 Subpart Dc § 60.43c(d))
 - Sulfur dioxide performance test and monitoring requirements
 - Fuel certification (40 CFR Part 60 Subpart Dc § 60.44c(h))
 - Monitoring requirements in 40 CFR Part 60 Subpart Dc §§ 60.49c(a) and (d) shall not apply where the owner or operator seeks to demonstrate compliance with the SO₂ standards based on fuel supplier certification (40 CFR Part 60 Subpart Dc §

60.46c(e)

Note that this second requirement will not be included in the operating permit since it states that certain monitoring requirements do not apply and it is not actually an applicable requirement or periodic monitoring. Therefore it does not need to be included in the permit.

- Particulate matter performance test requirements
 - Conduct an initial performance test (40 CFR Part 60 Subpart Dc § 60.45c(a)(8))
- Reporting and recordkeeping requirements
 - Notification requirements in accordance with 40 CFR Part 60 Subpart Dc § 60.48c(a)
 - Submit performance test results in accordance with 40 CFR Part 60 Subpart Dc § 60.48c(b)
 - Submit reports semi-annually and retain records for two years in accordance with 40 CFR Part 60 Subpart Dc §§ 60.48c(d), (e),
 (i) & (j)
 - Record quantity of fuel burned per day in accordance with 40 CFR Part 60 Subpart Dc § 60.48c(g)
 - Fuel supplier certification to meet the requirements 40 CFR Part 60 Subpart Dc § 60.48c(f)(1)
- Boiler 4 is also subject to the requirements in 40 CFR Part 60 Subpart A

 New Source Performance Standards General Provisions, as adopted by reference in Colorado Regulation No. 6, Part A, the following will be included in the permit (condition 10):
 - o Good practices (§ 60.11(d))
 - o Circumvention (§ 60.12)
 - Records of startups, shutdowns and malfunctions shall be maintained (§ 60.7(b))

Note that a more extensive list of requirements from 40 CFR Part 60 Subpart A was included in the construction permit. However, these requirements, if still applicable, will be included in the permit as periodic monitoring or under other requirements such as performance test or recordkeeping and reporting and will not be specifically identified as requirements under the NSPS general provisions.

Particulate matter emissions shall not exceed the following (Condition 15 and Reg 1, Section III.A.1.b):
 PE = 0.5(FI)^{-0.26}

Where: PE = Particulate emissions in lbs/mmBtu

FI = Fuel input in mmBtu/hr

At the maximum heat rate of the boilers, the particulate matter limits, when

burning natural gas are 0.172 lbs/mmBtu for Boilers 1 and 2, 0.168 lbs/mmBtu for Boiler 3 and 0.177 lbs/mmBtu for Boiler 4. When burning fuel oil the particulate matter limits are 0.176 lbs/mmBtu for Boilers 1 and 2, 0.174 lbs/mmBtu for Boiler 3 and 0.179 lbs/mmBtu for Boiler 4. Since these are the most conservative limits, these values will be included in the permit.

 APEN reporting (condition 17 and Colorado Regulation No. 3, Part A Section II.C)

The APEN reporting requirements will not be identified in the permit as a specific condition but are included in Section V (General Conditions) of the permit, condition 22.e.

 Within 180 calendar days after startup, the source shall certify compliance with the terms and conditions for these units (condition 18 and Reg 3, Part B, Section IV.H.2).

As discussed previously, the Division will consider that the first semiannual monitoring report shall serve as the self-certification that this unit can comply with the provisions in the construction permit. Therefore, this requirement will not be included in the operating permit.

As discussed for the 21 generators and 2 fire water pumps, many of the general applicable requirements identified in the Title V permit application will not be specifically identified in the operating permit, as they are included in the general conditions of the permit. In addition, the Title V permit application identifies the state only lead standard (Reg 8, Part C, Section I.B) as an applicable requirement. This requirement has not been included in the operating permit, since the Division does not consider combustion of natural gas, diesel fuel and/or jet fuel to be significant sources of lead emissions.

Streamlining of Applicable Requirements

Opacity

Boiler 4 is subject to the Reg 1 20% opacity requirement and the Reg 1 30% opacity requirement for certain specific operational activities. The Reg 1 20% opacity requirement applies at all times, except for certain specific operating conditions under which the Reg 1 30% opacity requirement applies. Boiler 4 is also subject to the state-only Reg 6, Part B 20% opacity requirement. Reg 6, Part B, Section I.A, adopts, by reference, the 40 CFR Part 60 Subpart A general provisions. 40 CFR Part 60 Subpart A § 60.11(c) specifies that the opacity requirements are not applicable during periods of startup, shutdown and malfunction. Boiler 4 is also subject to an NSPS Subpart Dc opacity requirement of 20% with one 6 minute period per hour not to exceed 27%. This NSPS opacity requirement applies at all times, except during periods of startup, shutdown and malfunction in accordance with 40 CFR Part 60 Subpart Dc §

60.43c(d).

The Reg 1 20%/30% requirements are more stringent than the Reg 6 Part B and NSPS opacity requirements during periods of startup, shutdown and malfunction. The NSPS opacity requirements are more stringent than the Reg 1 30% opacity requirements under all the specific operating conditions except startup but are less stringent than the state-only Reg 6 requirements. Since no one opacity requirement is more stringent than the others <u>at all times</u>, all four opacity requirements are included in the operating permit. See the attached grid for a clarified view on the opacity requirements and their relative stringency

SO_2

Boiler 4 is subject to the Reg 1 and Reg 6, Part B SO₂ requirements. The Reg 1 and 6, Part B SO₂ standards are the same, 0.80 lbs/mmBtu. The Reg 6, Part B requirement is a state-only requirement. Reg 6, Part B, Section I.A, adopts, by reference, the 40 CFR Part 60 Subpart A general provisions. Although not specifically stated in the general provisions, the Division has concluded after reviewing EPA determinations that the NSPS standards are not applicable during startup, shutdown and malfunction, although any excess emissions during these periods must be reported in the excess emission reports. Specifically, EPA has indicated (4/18/75, determination control no. A007) that when 40 CFR Part 60 Subpart A § 60.11(d) was developed "...it was recognized that sources which ordinarily comply with the standards may during periods of startup, shutdown and malfunction unavoidably release pollutants in excess of the standards." In addition, EPA has also indicated (5/15/74, determination control number D034) that "[s]ection 60.11(a) makes it clear that the data obtained from these reports are not used in determining violations of the emission standards. Our purpose in requiring the submittal of excess emissions is to determine whether affected facilities are being operated and maintained 'in a manner consistent with good air pollution control practices for minimizing emissions' as required by 60.11(d)." Therefore, the Division considers that the Reg 6, Part B SO₂ requirements do not apply during periods of startup, shutdown and malfunction. Therefore, the Reg 1 SO₂ requirement is more stringent than the Reg 6, Part B requirement and the Reg 6, Part B requirement will be streamlined out of the permit. Note that although the Reg 1 SO₂ standard, which is included in the operating permit applies all the time, a malfunction may be reported to the Division as an upset condition in accordance with the requirements in Section II.E of the Common Provisions Regulation.

PM

Boiler 4 is subject to the Reg 1 particulate matter standards (Reg 1, Section III.A.1.b) and the state-only Reg 6, Part B particulate matter standards for new fuel burning equipment (Reg 6, Part B, Section II.C.2). The Reg 1 and Reg 6, Part B particulate matter standards are the same. As discussed under SO₂ above, the Division considers that the Reg 6, Part B particulate matter standard does not apply during periods of startup, shutdown and malfunction. Therefore,

the Division streamlined the Reg 6, Part B particulate matter standards out of the operating permit in favor of the Reg 1 particulate matter standards. Note that although the Reg 1 particulate matter standard, which is included in the operating permit applies all the time, a malfunction may be reported to the Division as an upset condition in accordance with the requirements in Section II.E of the Common Provisions Regulation.

Miscellaneous

Boiler 4 is subject to NSPS Dc and NSPS Dc specifies that records shall be kept for two years. Reg 3, Part C, Section V.C.6.b (general condition 22) requires that records be kept for five years. Therefore, the requirement to retain records for 2 years in NSPS Dc will be streamlined out of the permit in favor of the Reg 3, Part C recordkeeping requirements.

Boiler 4 is subject to NSPS Subpart Dc and the NSPS general provisions (Subpart A), which include construction and startup notification requirements. The startup notification requirement in Reg 3, Part B, Section IV.H.1, which was inadvertently not included in the construction permit, will be streamlined out of the permit in favor of the NSPS startup notification requirements which are more specific than the Reg 3 notification requirements.

Boiler 4 is subject to NSPS Dc, which includes a limit on the sulfur content of the fuel. The NSPS Dc fuel oil sulfur limit is 0.5%, which is less stringent than the fuel oil sulfur limit in Colorado Construction Permit 94BO366 of 0.05%. Although the NSPS Dc fuel oil sulfur limit is less stringent than the construction permit the NSPS Dc limit will not be streamlined out of the permit since the monitoring, reporting and recordkeeping requirements associated with the limit are more specific and stringent than the construction permit fuel oil sulfur requirement.

2. Emission Factors - Approval of emission factors is necessary to monitor compliance with the permit limitations. The following emission factors will be included in the operating permit.

Boilers 1 - 3:

Pollutant	Natural Gas		Fuel Oil	
	lbs/mmSCF	Source	lbs/10 ³ gal	Source
PM	1.9	AP-42, Section 1.4	2	AP-42, Section 1.4
PM ₁₀	1.9	(dated 3/98)	1	(dated 3/98)
SO ₂	0.6		3.8	December 1995 Stack
				Test
NO_X	114	April 2001 Stack	16.5	April 2001 Stack Test
		Test		
CO	30.3	April 2001 Stack	3.4	April 2001 Stack Test
		Test		
VOC	5.5	AP-42, Section 1.4	0.2	AP-42, Section 1.4
		(dated 3/98)		(dated 3/98)

Boiler 4:

Pollutant	Natural Gas			Fuel Oil
	lbs/mmSCF	Source	lbs/10 ³	Source
			gal	
PM	7.35	Manufacturer's	6.85	Manufacturer's
PM ₁₀	7.35	Emission Factors	6.85	Emission Factors
SO ₂	0.6	AP-42, Section 1.4	4.25	(note SO ₂ emission
		(dated 3/98)		factor is based on a
NO_X	37.8	Manufacturer's	53.4	sulfur content of
CO	157.5	Emission Factors	21.2	0.03%)
VOC	5.5	AP-42, Section 1.4	0.2	AP-42, Section 1.4
		(dated 3/98)		(dated 3/98)

- 3. Monitoring Plan Compliance with these requirements include monitoring and recording fuel consumption and calculating emissions from each boiler monthly. When using natural gas as fuel, compliance with the opacity and particulate matter requirements shall be presumed, in the absence of credible evidence to the contrary. Compliance with the opacity requirements, when burning diesel or jet fuel shall be monitored by performing EPA Method 9 visual emission observations. In the absence of credible evidence to the contrary, compliance with the particulate matter requirements, when burning natural gas is presumed. Compliance with the particulate matter requirements when burning either diesel or jet fuel, shall be presumed, in the absence of credible evidence to the contrary. This presumption is based on the assumption that the heat content of the fuel will never be less than 11,600 Btu/gal. Compliance with the SO₂ requirements when burning either diesel or jet fuel, shall be presumed, in the absence of credible evidence to the contrary provided the sulfur content of the diesel and/or jet fuel does not exceed 0.05%. This presumption is based on the assumption that the heat content of the fuel will never be less than 4,800 Btu/gal.
- **4. Compliance Status -** The Division considers that the first semi-annual monitoring report submitted shall serve as the self-certification that these units can comply with the applicable requirements.

D. Building 011 and 011 West Cooling Towers.

1. Applicable Requirements - There are several cooling towers associated with the operations at this facility. At the time of the original Title V operating permit application submittal (December 21, 1999), only two cooling towers had emissions above APEN de minimis levels (1 ton/yr of any criteria pollutant) and therefore these two units had to be included in the operating permit as significant emission units. One of the cooling towers (Building 011) is grandfathered from construction permit requirements (placed in service and/or last modified prior to February 1, 1972) and the other cooling tower (Building 011W) was subject to construction permit requirements and construction permit 98BO0212 was issued for that unit (initial approval issued December 1, 1998 and final approval issued

January 12, 2000). IBM submitted additional information on July 12, 2000 and in this additional information submittal, IBM calculated PM and PM₁₀ emissions from the cooling towers using a different methodology, which resulted in lower estimated emissions for both cooling towers (B011: $PM = PM_{10} = 3.08$ tons/hr and B011W: PM = PM_{10} = 1.86 tons/yr). The Division approved of the alternate methodology used in the July 12, 2000 information submittal, however, at that time both cooling towers still had emissions above the APEN de minimis level (1 ton/yr of any criteria pollutant). The Denver metro area was re-designated as attainment/maintenance for PM₁₀ on October 16, 2002 and with this redesignation, the APEN de minimis level is now 2 tons/yr of any criteria pollutant. Therefore, the Building 011W cooling tower is no longer subject to construction permit requirements. At IBM's request the Division cancelled the construction permit for the Building 011W cooling tower. However, IBM indicated that the cooling tower has chloroform emissions above the APEN reporting threshold for non-criteria reportable pollutants (Bin A, Scenario 2, 125 lbs/yr reporting level). Therefore, the operating permit will include the Building 011W cooling tower in Section II of the permit since is it subject to APEN reporting requirements.

This Building 011 and 011W cooling towers are subject to the following applicable requirements:

20% opacity (Regulation No. 1, Section II.A.1)

Based on engineering judgment, the Division believes that for purposes of opacity emissions none of the conditions under Reg 1, Section II.A.4 apply. Specifically activities such as fire building, cleaning of fire boxes and soot blowing are not germane to cooling towers. In addition, there is really no "startup" involved in operating a cooling tower. Finally, the Division does not believe that adjustment of the control device (drift eliminators) can be done while operating the tower and that process modifications would be limited. Therefore, the 30% opacity requirement will not be included in the operating permit since the specific operating activities under which it applies do not occur with this unit.

APEN reporting (Reg 3, Part A, Section II)

In addition, as discussed for boilers 1 thru 4, many of the general applicable requirements identified in the Title V permit application will not be specifically identified in the operating permit, as they are included in the general conditions of the permit.

2. Emission Factors - Since cooling towers provide direct contact between the cooling water and the air passing through the tower, some liquids can be entrained in the air stream and emitted as "drift" droplets. Particulate matter contained in the "drift" is considered an emission as well as any emissions (i.e. chlorine or chloroform) from water treatment chemicals used in the cooling tower. Approval of emission factors for these units is necessary to monitor compliance

with the emission limits and to determine annual emissions for purposes of APEN reporting and payment of fees.

In the processing of the construction permit for the Building 011W tower, the Division determined that chlorine emissions were below APEN de minimis levels. Sodium hypochlorite is used to treat the cooling water. It was not clear from review of the master file whether or not chloroform (a HAP and a VOC) emissions are formed when this compound is used. However, the source proposed an emission factor of 2.3 kg/10⁹ liter for estimating chloroform emissions (from "Locating and Estimating Air Emissions from Sources of Chloroform", EPA-450/4-84-007c, March 1984) and when using this emission factor, emissions of VOC (as chloroform) are below APEN de minimis levels (0.15 tons/yr for B011 and 0.09 tons/yr for B011W) for criteria pollutants but above the de minimis (based on scenario 1 and 2) level for a bin A HAP. Therefore, these pollutants must be reported on APENs submitted for the cooling towers. Although the source is required to report emission of HAPs for the purposes of APEN reporting and payment of fees, the Division has not as a policy included these calculations in the specific portions of the operating permit. The APEN reporting requirements and the requirement to pay annual fees are included in the General Conditions (Section IV, No. 22.e) of the operating permit and the source is still subject to these requirements.

Therefore, only PM and PM₁₀ emission calculations for the Building 011 cooling tower will be included in the operating permit as specific requirements. The source has proposed to calculate PM and PM₁₀ emissions as follows:

PM = PM₁₀ = (water flow, gpm) x (water density, lbs/gal) x (% drift) x (31.3% PM/PM₁₀ from drift) x (total solids, ppm)

Where: % drift = 0.005%
31.3% PM from drift - from EPA-600/7-79-251a, November 1979,
"Effects of Pathogenic and Toxic Materials Transported Via Cooling
Device Drift - Volume 1, Technical Report", page 63

Although IBM's latest estimate (July 12, 2000) of PM and PM $_{10}$ emissions for the B011 cooling tower are below APEN de minimis levels, since PM and PM $_{10}$ emissions are dependent on the total solids concentration in the circulating water, PM and PM $_{10}$ emissions may increase if the total solids concentration increases. Since the July 12, 2000 estimates were close to the 2 tons/yr threshold (1.86 tons/yr), IBM should re-estimate PM and PM $_{10}$ emissions if the total solids concentration exceeds the levels (3,000 ppm) used in the July 12, 2000 analysis to determine whether the APEN de minimis threshold is exceeded.

3. Monitoring Plan - The permit will specify that the source record the hours the Building 011 cooling tower is operated per year and multiply that by the hourly design circulation rate to determine the annual quantity of water circulated for purposes of APEN reporting. A sample of circulating water shall be gathered and analyzed for TDS concentration annually for the Building 011 cooling tower. The TDS concentration shall be used to calculate particulate matter emissions. Since

currently, the Building 011W cooling tower is subject to APEN reporting requirement for non-criteria reportable pollutants (chloroform), the permit will require that the source calculate emissions of criteria and non-criteria reportable pollutants as necessary to monitor compliance with the APEN reporting requirements. The Division included the requirement to calculate criteria pollutant emissions since PM and PM₁₀ emissions are based on the total dissolved solids and as discussed previously, if the total dissolved solids increase above the levels previously evaluated, PM and PM10 emissions may exceed APEN reporting levels. In the absence of credible evidence to the contrary, compliance with the opacity requirement will be presumed, provided the cooling towers and associated drift eliminators are operated and maintained in accordance with the manufacturer's recommendations and good engineering practices.

4. Compliance Status - The source certified in their Title V permit application that these units are in compliance with all applicable requirements.

F. 800,000 Gal Above-Ground Diesel Storage Tank

1. Applicable Requirements - The Title V permit application gives conflicting information on when this unit was installed. Form 2000-301 indicates that the tank was first placed in operation in 1979. However, on the form 2000-700 that provides additional information to support form 2000-605 (permit shield request), the Title V permit application indicates that the tank was installed in 1986 and that the tank is subject to the requirements in 40 CFR Part 60 Subpart Kb § 60.116b(b). However in their comments on the draft operating permit, received on June 27, 2000, the source indicated that the tank was actually first placed into operation in 1979. Therefore, the Title V operating permit application incorrectly indicates that the tank is subject to the requirements in NSPS Subpart Kb. However, the tank may be subject to the requirements in NSPS Subpart Ka.

This tank was previously permitted under Colorado Construction Permit C-12,515-5 (final approval dated August 26, 1980) but the source requested that the permit be cancelled in 1996 because emissions were below APEN de minimis levels and the permit was subsequently cancelled. Under the "catch-all" provisions in Reg 3, Part A, Section II.D.1 and Part B, Section III.D, none of the APEN or permit exemptions can be taken if the tank is subject to the requirements of 40 CFR Part 60 Subpart Ka. Tanks used to store fuel oil Nos. 2 through 6, turbine fuel oil Nos. 2-GT through 4-GT and diesel fuel oil Nos. 2-D and 4-D are not subject to the requirements in 40 CFR Part 60 Subpart Ka. The Title V permit application indicates that the tank is exempt from the provisions of Subpart Ka, since it stores diesel fuel. However, the source indicated in their comments on the draft permit received on January 24, 2003 that the tank contained No. 1 fuel oil which is not excluded from the definition of petroleum liquid in 40 CFR Part 60 Subpart Ka. Since the true vapor pressure of the tank is less than 10.3 kPa (1.5 psia), only recordkeeping requirements apply to this tank.

The source filed an APEN for the tank on September 25, 2001. Since the

requested emissions from this tank are less than APEN de minimis levels, a VOC emission limit will not be included in the permit.

No construction permit will be re-issued for this tank. However, the appropriate applicable requirements will be included in the operating permit. The tank is subject to the following applicable requirements:

- APEN reporting (Reg 3, Part A, Section II).
- 40 CFR Part 60 Subpart Ka, as adopted by reference in Colorado Regulation No. 6, Part A, specifically this unit is subject to the following requirements:
 - o Maintain records of the liquid stored, the period of storage and the maximum true vapor pressure of the liquid in 40 CFR Part 60 Subpart Ka § 60.115a(a).

Since the true vapor pressure of the tank is less than 10.3 kPa (1.5 psia), only record keeping requirements apply to this tank.

- General requirements for maintenance and operation of storage tanks (Reg 7, Section III.A).
- Disposal of VOC compounds general (Reg 7, Section V.A).

Note the above two requirements are included in the general conditions (Section IV) and therefore will not be specifically identified and addressed in Section II of the permit.

 General requirements for storage and transfer of petroleum liquid requirements for pumps and compressors (Reg 7, Section VI.A.1)

As discussed above, no VOC emission limits will be included in the operating permit since requested emissions are below APEN de minimis levels. However, the tank is still subject to APEN reporting requirements because of the "catch-all" language.

- **2. Emission Factors -** Although VOC emissions from this unit are below APEN de minimis levels, this unit is subject to APEN reporting requirements. Approval of emission factors is necessary to determine annual emissions for the purposes of APEN reporting and payment of fees. The permit will require that VOC emissions from tank breathing and working losses shall be determined using TANKS 4.0 or higher.
- **3. Monitoring Plan -** The source will be required to determine VOC emissions from this tank on an annual basis. The annual compliance certification required by the operating permit will serve as the compliance indication for the NSPS Ka provisions.

4. Compliance Status - The source certified that this tank was in compliance with all applicable requirements. This tank was previously permitted but was cancelled at the request of the source since emissions were below APEN de minimis. Since the tank is subject to the requirements in 40 CFR Part 60 Subpart Ka the APEN and construction permit exemptions may not be taken. The source submitted an APEN for the tank on September 25, 2001. No construction permit will be re-issued, however, the applicable requirements were directly incorporated into the operating permit by processing this unit as a combined construction/operating permit as allowed by Colorado Regulation No. 3, Part A Section I.B.36.h and Part C, Section III.B.7.

G. Cold Cleaner Solvent Degreaser

A solvent degreaser was included in the insignificant activities list in the Title V permit application and the Division had subsequently included this emission unit in Appendix A of the draft permit. IBM included emission calculations for the solvent degreaser and these calculations showed that VOC emissions were less than 1 ton/yr. However, upon further review, the Division believes that the solvent degreaser at the facility most likely meets the definition of a cold cleaner in Regulation No. 7, Section X. Since VOC emissions from the cold cleaner solvent degreaser are below 2 tpy, the degreaser is exempt from APEN reporting and construction permit requirements. However, the solvent degreaser is subject to requirements in Colorado Regulation No. 7, Section X and under the "catch-all" provisions in Regulation No. 3, Part C, Section II.E (2nd paragraph) the degreaser cannot be considered an insignificant activity because it is subject to specific requirements in Regulation No. 7. Since the degreaser cannot be considered an insignificant activity, the degreaser will be included in the operating permit as a significant emission unit.

The Division will ask IBM to verify that the solvent degreaser is in fact subject to the requirements in Colorado Regulation No. 7, Section X during the public comment period. If in fact the degreaser is not subject the these requirements, the Division will remove the cold cleaner solvent degreaser from Section II of the permit and include it in Appendix A as an insignificant activity. This revision will not require further public comment.

The applicable requirements from Regulation No. 7 for this unit are as follows:

- Transfer and storage of waste solvent and used solvent (Reg 7, Sections X.A.3 and 4)
- Solvent Cold Cleaner Requirements (Reg 7, Section X.B)
 - o Control Equipment covers, drainage, labeling and spray apparatus requirements (Reg 7, Section X.B.1)
 - o Operating Requirements (Reg 7, Section X.B.2)

IV. Insignificant Activities:

General categories of insignificant activities include: in-house experimental or analytical laboratory equipment, chemical storage tanks/containers < 500 gal, landscaping and site housekeeping equipment (< 10 hp), storage tanks (limited throughput and contents) and sources with emission less than APEN de minimis. Specific insignificant activities identified in the Title V permit application are:

<u>Units with emissions less than APEN de minimis - criteria pollutants (Reg 3 Part C.II.E.3.a)</u>

Building 009 Cooling Towers (PM and PM₁₀ less than 1 tpy) Building 020E Cooling Towers (PM and PM₁₀ less than 1 tpy) Building 020W Cooling Towers (PM and PM₁₀ less than 1 tpy) Sand Pile for Street Sanding (PM and PM₁₀ less than 1 tpy) Foam Packaging Booth (VOC less than 1 tpy)

Chemical storage tanks or containers < 500 gal (Reg 3 Part C.II.E.3.n)

Chemical Storage and Dispensing Hood Toner Testing Hood

Landscaping and site housekeeping devices < 10 hp (Reg 3 Part C.II.E.3.bb)

Emissions of air pollutants which are not criteria or non-criteria reportable pollutants (Reg 3 Part C.II.E.3.00)

Various Water Condensate Storage Tank

Storage tanks with annual throughput less than 400,000 gal/yr and meeting content specifications (Reg 3 Part C.II.E.3.fff)

Diesel Storage Tanks at Following Locations and Size:

Building 002 (300 gal)

Building 003 (25 gal)

Building 003W (5,000 gal)

Building 004 (50 gal)

Building 008 (500 gal)

Building 009W, six (6) (800 gal)

Building 010 (100 gal)

Building 011 (300 gal)

Building 016b (5,000 gal)

Building 016c (250 gal)

Building 017N (300 gal)

Building 020N (650 gal)

Building 020W, three (3) (1,200 gal)

Building 021 (75 gal)

Building 022 (300 gal)
Building 025 (220 gal)
Building 025E (5,000 gal)
Seven (7) 800 gal tanks for new generators
One (1) 500 gal tank for new generator

<u>Sandblast equipment where blast media is recycled and blasted material is collected (Reg 3 Part C.II.E.3.www)</u>

Sandblasting

V. Alternative Operating Scenarios:

No alternative operating scenarios were requested in the Title V Permit application.

VI. Permit Shield:

The source identified and justified a list of non-applicable requirements that they wish to be specifically shielded from. Those requirements that the Division included in the permit shield can be found in Section III.1 of the operating permit. Further discussion on granting the permit shield for Colorado Regulation No. 7, Section I.B.2.d and e is warranted and is discussed below. Also discussed below are those non-applicable requirements that the Division was unable to include in the permit shield.

A. <u>Colorado Regulation No. 7, Section I.B.2.d and e:</u> The source requested the permit shield for these requirements. These requirements relate to reporting requirements associated with existing (commenced operation prior to October 30, 1989) VOC sources. An initial report was required to be submitted by October 30, 1990 (Reg 7, Section I.B.2.d) and an updated report was required to be submitted to the source by October 30, 1991 (Reg 7, Section I.B.2.e). The source indicated in their Title V permit application that this requirement was not applicable to their facility, since their facility is not a VOC source as defined by this regulation.

This request for the permit shield is complicated by the fact that 1) if applicable, the deadlines for complying with these requirements have long passed and 2) at the time these requirements did apply, IBM did have other VOC type operations that may have been intended to comply with this requirement. After this Reg 7 reporting requirement deadline was past, IBM canceled permits for VOC type operations and sold certain VOC operations to Lexmark. Discussions within the Division indicated that these Reg 7 reporting requirements were for those types of VOC sources that were <u>not</u> subject to control technique guidelines (CTG) such as the specific requirements in Reg 7 (i.e. surface coating requirements in Reg 7, Section IX) <u>and</u> had a potential to emit greater than 100 tpy. This reviewer believes that more than likely, IBM's VOC operations at the time of this reporting requirement were either subject to a Reg 7 CTG and/or an NSPS requirement

that would have been considered RACT. The sources identified in IBM's permit application are such sources that would not have been subject to CTGs. Potential to emit calculations were performed on those units identified in the Title V permit application that were in service prior to October 30, 1989. Potential to emit calculations were based on design rates, emission factors identified in the permit application and 8760 hrs/yr for the boilers and 500 hrs/yr for the generators (per EPA's September 6, 1995 EPA policy memo allowing PTE of emergency generators to be based on 500 hrs/yr). The potential to emit for these units was determined to be less than 100 tons/yr. Therefore, the Division will grant the permit shield for these requirements.

- <u>B. 40 CFR Part 60 Subpart Ka:</u> The source requested the permit shield from these requirements with the justification that the 800,000 gallon fuel oil storage tank was built in 1986. However, the source has since indicated that the tank was operational in 1979. Therefore the tank may be subject to the requirement in 40 CFR Part 60 Subpart Ka and the permit shield cannot be granted.
- C. <u>40 CFR Part 82</u>, <u>Subpart B:</u> The source requested the permit shield from these requirements with the justification that IBM does not service motor vehicle air conditioners (MVAC). The Division is willing to grant the shield for the reason specified. However, the Division can only grant the permit shield for 40 CFR Part 82 Subpart B, Sections 82.30, 82.32, 82.34(a) and (d) and 82.42(a) and (b)(1), (2) and (4) as these are the only requirements from 40 CFR Part 82 Subpart B that have been incorporated into Colorado Regulation No. 15 by reference. The remaining sections of the 40 CFR Part 82 Subpart B have not been incorporated into Colorado Regulations and therefore the Division does not have the authority to grant the shield for those requirements.
- D. 40 CFR Part 82 Subpart F § 82.156.156(e): The source requested the permit shield from this requirement with the justification that IBM does not service MVAC-like appliances. The requirement states that "[r]efrigerant may be returned to the appliance from which it is recovered or to another appliance owned by the same person without being recycled or reclaimed, unless the appliance is an MVAC or MVAC-like appliance". This requirement applies to appliances that are not MVAC or MVAC-like appliances and therefore the shield cannot be granted for this requirement.
- E. 40 CFR Part 82 Subpart F § 82.156(I): The source requested the permit shield from this requirement with the justification that IBM does not service MVAC-like appliances. A review of the July 1, 1999 version of 40 CFR Part 82 indicates that there is no 40 CFR Part 82 Subpart F § 82.156(I) and therefore no permit shield is necessary.

The following applicable requirements were streamlined out of the permit and have been included in the permit shield **for Boiler 4.**

• State-only - 0.35 lbs/mmBtu SO₂ requirement (Reg 6, Part B, Section

- II.D.3.b), streamlined out since Reg 1 SO₂ requirement is more stringent.
 State-only PE = 0.5(FI)^{-0.26} lbs/mmBtu PM requirement (Reg 6, Part B, Section II.C.2), streamlined out since Reg 1 PM requirement is more stringent.
- Requirement to send a startup notice within thirty days (Reg 3, Part B, Section IV.H.1), streamlined out in favor of NSPS general provision to send a startup notification.
- Requirement to maintain records for two years in 40 CFR Part 60 Subpart Dc § 60.48c(i), streamlined out since the requirements for retaining records in Reg 3, Part C (general condition 22 in the operating permit) is more stringent.